

WE CLAIM:

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A17
1. A method of growing a SiC film within an MBE system having a growth chamber and effusion cells having shutters, comprising the steps of:
- charging a first crucible with a quantity of Fullerenes;
 - installing said first crucible into a first effusion cell;
 - placing said first effusion cell into the growth chamber;
 - coating a second crucible with a layer of SiC;
 - charging said second crucible with a quantity of solid Si;
 - installing said second crucible into a second effusion cell;
 - placing said second effusion cell into the growth chamber;
 - providing a SiC substrate;
 - preparing said substrate;
 - loading said substrate into the growth chamber;
 - evacuating the growth chamber;
 - heating said substrate;
 - heating said first effusion cell;
 - heating said second effusion cell; and,
 - growing a homoepitaxial layer of SiC upon said substrate by controllably actuating the effusion cell shutters.
2. The method of claim 1 wherein said substrate is heated to a temperature of about 1500° C.
3. The method of claim 1 wherein said first effusion cell is heated to a temperature range of about 500° C to 650° C.
4. The method of claim 1 wherein said second effusion cell is heated to a temperature above about 1500° C.
5. The method of claim 1 wherein said substrate is prepared by chemical-mechanical polishing.
6. A method of growing a SiC film within an MBE system having a growth chamber and effusion cells having shutters, comprising the steps of:
- charging a first crucible with a quantity of Fullerenes;
 - installing said first crucible into a first effusion cell;
 - placing said first effusion cell into the growth chamber;

coating a second crucible with a layer of SiC;
 charging said second crucible with a quantity of solid Si;
 installing said second crucible into a second effusion cell;
 placing said second effusion cell into the growth chamber;
 providing a SiC substrate;
 polishing said substrate;
 cleaning said substrate;
 etching said substrate;
 rinsing said substrate;
 drying said substrate;
 loading said substrate into the growth chamber;
 evacuating the growth chamber;
 heating said substrate to a temperature of about 1500° C;
 heating said first effusion cell to a temperature range of about 500° to 650° C;
 heating said second effusion cell to a temperature above about 1500° C; and,
 growing a homoepitaxial layer of SiC upon said substrate by controllably
 actuating the effusion cell shutters.